An Account of ſome Books.

I. *MECHANICA, ſive De MOTU Tractatus Geometricus; PARS SECUNDA; in qua, De CENTRO GRAVITATIS Ejuſque CALCULO: Auth.* Johanne Wallis, *SS. Th. D. Geometriæ Profeſſ. Saviliano in Celeberr. Acad. Oxonienſi; Regalis Societ. Sodali, & Regiæ Majeſtati à Sacris. Londini, Impenſis* Moſis Pitt *in Vico vocato* Little Britain, 1670. in 4°.

IN this *Second* Part (amongſt many other things, in this and the foregoing Part, *Demonſtrated*, which are wont to be *Poſtulated*, but ſhould be Proved ;) the Excellent Author *demonſtrates* the Center of Gravity *to be*(which hath not been done formerly, that we know of, by any ;) and that, as to all *Ponderation*, the *whole weight* may juſtly be reputed There to *be*, where is its *Center of Gravity* ; and ſo much to be mov'd : with other general *Affections* thereof. He ſhews alſo, from General Principles, How, by Calculation, to determine, as well the *Magnitude*, as the *Center of Gravity*, in innumerable ſorts of *Lines*, *Surfaces*, and *Solids*, (and the *Aggregates* or *Differences* of ſuch.) As, in all *Right-lined Figures* whatſoever ; in all *Solids bounded by Plains* ; in *Cones* alſo and *Cylinders* : And in *Curve-lined Figures* innumerable ; not only (with *Archimedes*) in the *Parabolar* Figure, but likewiſe in all *Paraboloeids* whatever (and the *parts* of ſuch ;) together with their *Ungular* Solids inſiſting on them ; and their *Conoeids* or other Solids made by the *Converſion* (perfect, or imperfect,) of thoſe Plains (or their Parts) about any *Axe* in the ſame Plain aſſigned ; and the *Center of Gravity* of all theſe *Solids*. And the like alſo in other Figures *Reciprocal* to theſe Paraboloeids, infinitely continued between ſuch Curves and their Aſymptotes : Shewing, which of thoſe Figures (*infinitely Long*) are of *Finit* magnitude, (and what that is ;) which, of *Infinit* : and, which of them have, which have not, *Centers of Gravity* ; and, in thoſe which have, how to Aſſign them : And the like of the *Unguls* appertaining to them,

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them, and the *Solids* made by their *Converſion* about an *Axe :* In many of which, the Magnitude of the *Vngle* or *Solid* is ſhew'd to be but *Finit*, where the Magnitude of the reſpective *Plain* (on which they ſtand, or by whoſe converſion they be made) is *Infinit:* and (contrary-wiſe) in Others, the Magnitude of the *Vngle* or *Solid* to be *Infinit*, where that of the *Plain* is but *Finit*.

He gives alſo General *Methods*, How, from the *Center of Gravity* of a *Plain* (or of *Lines* deſcribed in a Plain) whoſe Magnitude is alſo known; to find the Magnitude of the *Vngles*, and *Solids* made by Converſion thereof about aſſigned Axes; and, from *Theſe*, to find *That :* with other like Proceſſes, from *Plains* to *Solids*, and ſo onward. He ſhews not only (with *Archimedes*) the *Solidity* and *Surface* of the *Sphere* and *Cylinder*; but of their *Segments* and *Portions*, cut off by a Plain, or any number of Plains, in what manner ſoever; and the *Center of Gravity* of the ſame: moſt of which (as to the Solidity and Center of Gravity) is in like manner applicable to the *Spheroid*; uſeful in *Guaging* Veſſels, and otherwiſe. He ſhews particularly, that the *Scalene Cylindrick Surface*, is to the *Erect*, as the *Perimeter of an Ellipſe* to that of a Circle.

He ſhews the Center of Gravity of all *Arches* of Circles, with their *Superficial Vnguls*, and the *Surfaces* made by the *Converſion* of ſuch Arches about aſſigned *Axes*. And the like, of the *Sectors*, *Segments*, and other *Portions of Circles*, (which are applicable alſo to thoſe of *Ellipſes ;*) with the *Vnguls*, and *Solids* made by ſuch *Converſion*; and their *Centers of Gravity*. He doth the like in the *Cycloid*, ſhewing the length of the *Curve*, and of the *Portions* thereof, with their *Centers of Gravity*, and their ſeveral *Superficial Vnguls*, and *Surfaces*, made by *Converſion*, and the *Centers of Gravity* of all theſe. As likewiſe the Magnitude of the *Plain*, as well of the *Primary Cycloid*, as of the *Secundary*, whether *Contracted* or *Protracted*; with their ſeveral *Tangents :* and of the *Segments* and *Portions* of thoſe Plains; with their ſeveral *Vnguls*, and *Solids* made by their Converſion (Perfect, or Imperfect,) and the *Centers of Gravity* of all theſe: Where-

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in he proſecutes at large, what was deliver'd in his Book *De Cycloide*, formerly publiſh't; continuing his *Calculations* (which were there begun) to a great number of Particular Caſes, which (for reaſons then aſſigned) were there omitted, and which have not by any hitherto been computed.

He doth the like, in the *Figure of Right-Sines*, in the Figure of *Verſed Sines*, and of *Arches*; aſſigning the *Magnitude* of thoſe *Figures*, and of their *Segments* and *Portions*; with their *Unguls*, and *Solids* by *Converſion*; and the *Centers of Gravity* of all theſe. Whence (amongſt many other things) are deduced the *ſums* of the *Right-Sines*, *Verſed Sines*, and *Arches*, appertaining to any aſſigned Portion of a Circle; and the *Sums* of their *Squares*, *Cubes*, or other *Powers*:

He doth the like in *Spiral* Figures, as well that of *Archimedes*, as an infinit number of *other Spirals*; ſhewing the *Magnitude* of the ſeveral *Parts* or *Sectors*; with their *Centers of Gravity*; (all applicable alſo to their reſpective *Scalar Solids*:) and the reſpective *Paraboloeids* with which they Symbolize, and by whoſe *Convolution* they are made; their *Tangents* alſo, with much more concerning them. He proſecutes the ſame in part, but more briefly, in the *Ciſſoeid*, and *Conchoeid*, and the *Figure* of *Tangents*; as to the *Magnitude* of thoſe Figures, and the Parts thereof; their *Unguls*, *Solids*, and *Centers of Gravity*. He ſhews particularly as to the *Ciſſoeid*, how it doth ſymbolize with the *Cycloeid*, the parts of the one figure being equal to the reſpective parts of the other: And, as to the *Conchoeid*, That its Plain is in Magnitude (as well as Longitude) Infinite; yet a Solid made by its Converſion, equal to a finit Cylinder.

He ſhews alſo the *Quadrature* of the *Hyperbola*, and *parts* thereof; their *Unguls*, *Solids*, and *Centers of Gravity*: As alſo, an *Hyperbolical Solid, made by the Converſion of a Streight Line about an Axis not in the ſame Plain*; ſhewing the *Magnitude* of that *Solid*, and of its *Parts*, and their *Centers of Gravity*; and the ſeveral *Sections* of that *Solid made* by *Plains* in any aſſigned poſition; being *Parabola's*, *Hyperbola's*, *Ellipſes*, *Circles*, *Parallelograms*, and *Triangles*; according to the different Poſitions of the Cutting Plains: With

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many other particulars, too many to be here rehearſed.

In ſhort, you have here well nigh All or the Greateſt part of the moſt abſtruſe and intricate Speculations, as well of the Antient as the Moderns Geometers, hitherto diſcover'd, (with many new Additionals;) briefly and clearly deduced from Peculiar Principles and Methods of his own; (eſpecially thoſe of his *Arithmetica Infinitorum*;) which are alſo in like manner applicable to Innumerable other Caſes, as occaſion ſhall require. And his Method (in this and the former part) deducing all from the firſt principles, doth ſcarce depend upon any other Treatiſes as neceſſary to the underſtanding; ſave only the knowledge of ſome very ordinary things in common Geometry, and ſome few Propoſitions out of his own *Arithmetick of Infinits*, with ſome ſkill in the practice of *Numerous* and *Specious* Arithmetick.

II. *EXERCITATIONES MECHANICÆ*, Alexandri Marchetti. *Piſis*, *1669. in* 4°. *To be found at Mr.* Starky's *near* Temple Bar.

THis Author declareth, that though many Eminent men have already treated of the Subject of this his Book, as *Ariſtotle*, *Archimedes*, *Lucas Valerius*, *Guldinus*, *Galileus* and others; yet hath he not been deterred from writing of the ſame Argument, eſteeming, that he hath handled it more largly, more diſtinctly, and more clearly and eaſily: which, how he does actually perform, we leave to Mathematical Mechanicians to Judge.

III. *The Natural Hiſtory of* NITER, *or, a Philoſophical Diſcourſe of the Nature, Generation, Place, and Artificial Extraction of* NITER, *with its Vertues and Uſes, by* WILLIAM CLARKE. *London*, 1670. *in* 8°.

The Author of this Tract, eſteeming, that moſt, who have known this Mineral Body, ſeem to have had but a *partial* knowledge of it, undertaketh to deliver here its *Compleat* Hiſtory; And therefore

Firſt, deſcribeth *Niter* by its properties, *Figure* (like that of Needles,) *Taſte* (ſalt, ſharp and cooling,) and *Inflammability*,

mability, having this peculiar, that it burns *downwards.*

Secondly, giveth ſome Chymical Analyſis of *Niter*, both by *calcination*, in which he ſaith that it burns almoſt all away if refined; and by *Deſtillation in a Retort*, which maketh it yield a little Flegme, then a Spirit, firſt in the form of a white, and ſoon after in that of a red vapour, corroſive and fetid, leaving a *Caput mortuum* behind. Where the Author giveth us his opinion, that this Body being thus analyſed is rendered incapable of Redintegration; (concerning which the Reader may conſult that Noble and Experienced Philoſopher Mr. *Boyle*, in his *Eſſay* containing an Experiment with ſome Conſiderations touching the differing parts and Redintegration of *Salt-petre*; Printed 1661.)

Thirdly, examines the Queſtion, whether *this* Niter is the ſame with the Niter of the *Antients*; and reſolveth it in the *Affirmative.*

Fourthly, enquireth into the Generation and Place of Niter; Where he diſcuſſeth that *Inquiry*, whether in Houſes, or Walls, Earthen-floars, &c. *Niter* be *generated*, or *ſeparated* and drawn from the Air by the heat and dryneſs of the Places; obſerving, that the dryer the places, where Niter is, are kept, there is more *Niter*. Whereupon he diſcourſeth largely of the Niter in the *Air*, and making it not only a *Meteor* it ſelf, and particularly a cauſe of lightning and thunder, but a *general* cauſe of Meteors, joyntly with *Sulphur.*

Fifthly, he declareth the *Uſe* of Niter to *Animals* and *Vegetables*; affirming *firſt*, that the life of Animals, being a burning *Sulphur*, is, as't were, kindled by the *Nitrous* Air received into the Lungs and communicated to the Heart; and adding that as without Air, which is the life of Fire, the innate animal-heat would extinguiſh; ſo that Air, being *Nitrous*, not only inflames it, but from its Coolneſs ſo allays the ſame, that it doth not too much prey upon our Radical moiſture, and keeps our life in its due Fermentation; and moreover, by its diſſolving nature renders the humors of the Body more fluid, and ſo more apt to perform their Circular motions, for the entertaining of life. *Secondly*, that without this *Nitroſity* the Sulphur of Seeds would lye dormant in

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the Earth, be ſcorched up and wither'd, nor paſs into the pores of Plants.

Sixthly, he delivers the Artificial manner of Extracting and Refining of Niter; after he had firſt inform'd his Reader, How it may be known, whether a place be impregnated with Niter or no?

Seventhly, he giveth the *Vertues* and *Uſes* of Niter; *firſt* in *Phyſick*; where he affirms it to be not only *Cooling*, at leaſt by removing hot humors, whereby the Body may become cooler; but alſo *Reſolving*, *Purgative* and *Diuretical*: Upon the ſcore of all which properties 'tis uſed not only in *Burning Feavers*, in the form of the *Lapis prunellæ*, (the preparation of which he deſcribeth;) but alſo in thoſe Diſeaſes, in which are to be diſcharged by ſiege and Urine, hot, ſharp, cholerick and obſtructive humors. Having diſpatched this Medicinal uſe, he proceeds *next* to the uſe of Niter in *Chymiſtry*; where he obſerveth that by it may be made a pleaſant and cooling Acid; or a hot and burning Corroſive: that ſometimes it revives the Vomitive and Purgative vertue of *Antimony*, ſometimes it kills the Vomitive, and reviveth only the Purgative, and ſometimes it deſtroyes both, and quickens neither the Diuretick or Diaphoretick, &c. beſides that it Calcineth, Sublimeth and Diſſolveth *Minerals* and *Metals*. *Thirdly*, he adds the Uſe of Niter in *Artillery*; where he diſcourſes of the reaſon of the Compoſition and Force of *Gun-powder*, together with the Uſe and Office of every Ingredient of the ſame. *Fourthly* and laſtly, he ſets down the Uſes of Niter for *Refiners*, *Dyers* and *Cooks*.

ADVERTISEMENT.

THe Author of the Diſcourſe concerning *Mineral waters*, in Numb. 60. beginning *p.* 1074, deſireth, that theſe lines may be inſerted *p.* 1081. after the word *Dyſenteries*, *l.* 19. *viz.* Neither do I think this water any thing the worſe becauſe of the *Alome*, but much the better for it in Hypochondriack maladies: For by its adſtringency it defends the Tone of the Liver and the other natural parts, which otherwiſe are apt to be debilitated by purging and penetrating medicines; it being, according to *Galen's* advice, ever neceſſary to intermix ſome Adſtringents with Hepatick remedies; in Art. Med. c. 95. to which agree very good writers, antient and modern.

Errat. p. 1096. l. 2. r. *if he hit.*

LONDON,

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